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10/800,008	03/15/2004	Noriya Hayashi	080542-0166	6818

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EXAMINER	
GILLESPIE, BENJAMIN	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,008	HAYASHI ET AL.	
	Examiner	Art Unit	
	BENJAMIN J. GILLESPIE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-12 and 16-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-12 and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/29/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The current action contains multiple new grounds of rejection – however said new grounds have been necessitated by applicants' amendment filed 8/21/2009. The claims were never previously considered with the newly introduced "room temperature" limitation of claim 6, and the "bifunctional polyol" of claim 4 raises an issue under 35 U.S.C. 112 2nd paragraph. Thus it is proper to make the current action FINAL.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 6-9, 16, and 18** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. **Regarding claims 6-9, 16, and 18:** Claim 6 now requires that the fibrous material be impregnated with the matrix resin "at room temperature" however applicants have failed to provide proper discussion of this new limitation – and therefore have failed to establish that they were in possession of the newly claimed limitations at the time of filing.

4. Applicants point to originally filed claim 3 and paragraphs [0057]-[0048] for support of the newly claimed limitations. However, theses each fail to discuss an impregnation temperature, let alone one that is at room temperature. Moreover,

applicants' examples also fail to provide support for this limitation – at best, the examples teach an impregnation temperature of 60°C – which is not what is considered room temperature (i.e. about 23 to 27°C).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 6 and 11** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. **Regarding claim 6:** The phrase "gradually raising the temperature" renders claim 6 indefinite because "gradually" is a relative term.

7. **Regarding claim 11:** The limitations of claim 11 fail to further limit the scope of claim 4 because the polyol of claim 4 is already listed as "bifunctional".

Claim Rejections - 35 USC § 102/103

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b) 103(a) that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

102/103 Rejection I

10. **Claims 4, 11, and 17** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fukami et al (U.S. Patent 5,071,613).

11. **Regarding claim 4:** The rejection has been previously set forth in paragraphs 29-33 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

12. **Regarding claim 11**: The rejection has been previously set forth in paragraph 35 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

13. **Regarding claim 17**: The rejection has been previously set forth in paragraph 37 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Obviousness Rejection I

14. **Claims 6, 16, and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al (U.S. Patent 5,071,613).

15. **Regarding claims 6 and 18:** As discussed in paragraphs 11-12 of the instant rejection, Fukami et al teach a fiber reinforced polyurethane that is produced by impregnating a fibrous material with a polyurethane resin in a mold, however, there is no teaching that said impregnating step is done at room temperature.

16. Nevertheless, Fukami et al teach that it is important to suppress increases in viscosity of the resin during impregnation (Col 3 lines 61+). Moreover, Fukami et al teach that the reactants making up the resin may react upon mixing – this reaction would increase viscosity. Therefore, it would be obvious to select a temperature that is below the reaction temperature of the reactants – thereby preventing any unwanted premature reactions – while also choosing a temperature that will allow for sufficient flow of the reactants – i.e. the impregnation temperature is a result effective variable.

17. Therefore, it would have been obvious to arrive at the claimed "room temperature" limitation since it has been held that discovering an optimum value of a result effective variable only involves routine skill in the art. *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

18. Finally, it is noted that Fukami et al fail to list glass transition temperatures for the relied upon polyurethane. Still, one of ordinary skill would reasonably expect that compositions produced using the same reactants in the same stochiometric amounts would have the same material properties – including glass transition temperature.

19. **Regarding claim 16**: Resin transfer molding method is disclosed by the prior art as an available process for producing shape memory polyurethane (Col 1 lines 19-21).

Obviousness Rejection II

20. **Claims 4-8, 10-12, and 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al ('613) in view of Herrington et al ('622).

21. **Regarding claim 4:** The rejection has been previously set forth in paragraphs 39-41 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

22. **Regarding claim 6:** As discussed in paragraphs 15-17 of the instant rejection, Fukami et al render obvious a process for producing fiber reinforced polyurethane, however, there is no mention of glass transition temperatures.

23. Herrington et al also teach cured thermoset shape memory polyurethane that is the reaction product of di and tri-functional polyisocyanate and di and tri-functional polyol. The glass transition temperature of the polyurethane may extend to 120°C, wherein said Tg is controlled by the selection of reactant (Col 3 lines 4-10; 49-51).

24. Therefore, it would have been obvious to use a polyurethane in Fukami et al having a Tg that coincides with applicants' claimed range because it is disclosed as being suitable for analogous thermoset, shape-memory polyurethane, and a reasonable expectation of success has been established in arriving at said Tg since Herrington et al teach how it is controlled. Furthermore, one would be motivated to raise the Tg to temperatures of 120°C since it would prevent unwanted deformation at elevated temperatures, i.e. 80°C.

25. **Regarding claim 5 and 12:** The rejection has been previously set forth in paragraphs 43-44 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

26. **Regarding claims 7 and 10:** The rejection has been previously set forth in paragraphs 45-46 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

27. **Regarding claims 8 and 11:** The rejection has been previously set forth in paragraph 47 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

28. **Regarding claims 17 and 18**: The rejection has been previously set forth in paragraph 48 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Obviousness Rejection III

29. **Claims 5 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al ('613) in view of Recker et al (U.S. Patent 4,251,428).

30. **Regarding claim 5 and 12:** The rejection has been previously set forth in paragraphs 50-51 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Obviousness Rejection IV

31. **Claims 5 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al ('613) in view of Herrington et al ('622) in further view of Recker et al ('428).

32. **Regarding claim 5 and 12:** The rejection has been previously set forth in paragraphs 54-56 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Obviousness Rejection V

33. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al ('613) in view of Blenner et al (U.S. Patent 4,738,999).

34. **Regarding claim 9:** The rejection has been previously set forth in paragraphs 58-60 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Obviousness Rejection VI

35. **Claims 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukami et al ('613) in view of Herrington et al ('622) in further view of Blenner et al ('999).

36. **Regarding claim 9:** The rejection has been previously set forth in paragraphs 62-64 of the non-final rejection mailed 4/24/2009 and is herein incorporated by reference.

Terminal Disclaimer

37. The terminal disclaimer filed on 8/21/2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of applications 10/807,737 and 10/492,940 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Argument/Amendments

38. Applicant's amendments and corresponding arguments with respect to the rejection of claims 5, 7-12, 16-18 under 35 U.S.C. 112 2nd paragraph as being indefinite have been considered and the rejection is now rendered moot - the previous rejection has been withdrawn.

39. Applicants' argue the claimed invention has not been anticipated or rendered obvious by the prior art because Fukami et al fail to teach or suggest resin comprising "bifunctional polyol", and the relied polyurethane is never referred to as having "shape memory".

40. In response, column 2 lines 50-53 clearly teaches that the isocyanate-reactive material may either be a **diol** or triol. The fact that only tri-functional polyol is exemplified does not signify that bifunctional polyol is excluded from Fukami et al. Furthermore, with respect to the arguments for polypropylene glycol versus other diols - independent claims 4 and 6 are open to *any* bifunctional compounds.

41. Moreover, although the term "shape memory" is never explicitly stated in the prior art, one would ordinary skill would reasonably expect the relied upon reinforced polyurethane to exhibit the same material properties - i.e. glass transition temperature and flexibility - that would yield a "shape memory" foam to the extent it is limited by the claims.

Conclusion

42. . Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

43. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN J. GILLESPIE whose telephone number is (571)272-2472. The examiner can normally be reached on 8am-5:30pm.

45. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

46. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 1796

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